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ABSTRACT

Contingency theory, the formal structure of graduate schools, and the applicability of contingency variables to graduate schools as organizations are examined. Contingency theory is based on an open systems concept that views an organization as composed of many interdependent parts that are interacting with one another. It also holds that under certain conditions, an organization or a unit may use a closed system model, such as bureaucracy. The history of graduate education in the United States is sketched. A preliminary assessment of the current organizational structure of a random sample of graduate schools was undertaken. The structure of the graduate school is formed by the dean and other administrative personnel, and the Graduate Council, which is composed of selected graduate faculty members, a few administrators "ex officio," and some students. The graduate school structure does not seem to "fit" contingency theory prescriptions regarding technology and environmental variables. The nonroutine, intensive type of technology of the graduate school, and the uncertainty and dynamism of the environment would suggest an organic system; however, that used by the graduate school tends to be mechanistic, with standardization having priority. A question worthy of further study is whether a graduate school would be more effective if structural changes were made to fit the contingency variables.

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THE GRADUATE SCHOOL AND ITS ORGANIZATIONAL STRUCTURE:

A CONTINGENCY THEORY APPROACH

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There is a widespread belief that organizational theory is relevant for business and industry, but that the university is exempt from a comparable analysis because of the differences between it and business concerns. While there are very real differences (Kerr 1973; Corson 1975; Bailey 1973; Besse 1973; Hambrick 1976), it would seem appropriate to analyze the university itself as an organization, using concepts developed by organizational theorists from several disciplines. The concepts that seem particularly appropriate are those of contingency theory, which holds that there is no "one best way" to organize. Basically, the theory states that effective organization is dependent upon several variables, that it is an "if-then" situation. "If" certain contingencies prevail, "then" the effective organization utilizes a certain set of principles, and "if" other contingencies prevail, it uses another set (Hellriegel and Slocum 1974; Perrow 1970; Galbraith 1973; Lawrence and Lorsch 1969; Thompson 1967). The key contingencies upon which an organization's structure depends include the broad categories of technology, environment, size, goals and assessment (Thompson 1967; Perrow 1970; Ford and Slocum 1976). Businesses and other organizations (such as hospitals) have been found to be effective in the ways in which they structure their organizations in terms of these key contingency variables. The question must then be asked: Can the effectiveness of universities be improved through a consideration of organizational structure and the key contingency variables?

This paper will deal specifically with one component of the university--the graduate school--as the unit of analysis. Since the establishment of graduate education in the U.S. over 100 years ago, the same problems recur and never seem to be solved. The same recommendations are proposed, but never take hold. Could these problems within the graduate school, or others within the

university, be resolved or mitigated by structural changes? Are universities having difficulty meeting multiple goals because they are hampered by their present structure? Does contingency theory have applicability for educational organizations, and in particular, graduate schools? In an attempt to begin to answer some of these questions, a preliminary analysis of a sample of graduate schools was undertaken, with particular attention given to contingency variables. Thus, this paper will focus on (1) contingency theory, (2) the formal structure of graduate schools within the university, and (3) the applicability of contingency variables to graduate schools as organizations.

Concepts of Contingency Theory

Early organization theorists, Weber (bureaucracy), Taylor (scientific management), and Fayol (administrative management), attempted to define the "one best way" for an organization to be efficient, rational and effective. The Hawthorne studies in the 1930's demonstrated the impact of individuals and groups upon the organization's attainment of the goal of efficiency, which led to the Human Relations Movement. Mayo, Likert, Herzberg, Lewin, McGregor, and others in that school then concentrated on individuals and groups within organizations. However, the notion of "one best way" was brought into question by Woodward's (1958) study in Great Britain when she found that different structures were used by successful organizations with different technologies, and that a particular structure could be matched to a particular type of technology. Other researchers then began to study other variables that also might differ for successful organizations, and in the process developed a classification indicating under what conditions a particular structure would be most appropriate.

There are several key concepts that are necessary for the understanding of contingency theory. One is that it is based on an open systems concept - - that an organization is composed of many interdependent parts that are interacting with one another. Each part contributes to the whole and receives from the whole, and in turn interacts and is interdependent with a larger environment. It assumes that there are many variables that cannot be controlled or predicted, and therefore, the organization must develop search procedures regarding available alternative actions, mechanisms for deciding among the alternatives, and the setting of limits to define situations, what Simon (1957) termed "bounded rationality." However, contingency theory also holds that under certain conditions, a unit of an organization or a whole organization may use a closed system model, such as bureaucracy (Thompson 1967).

Thus, another key concept is that an organization may use different forms and structures within its system of interdependent parts. This concept, termed differentiation by Lawrence and Lorsch (1967), is paired with the concept of integration--the amount of collaboration required to achieve unity of effort for an effective organization to accomplish its task(s) in its environment. Integration may be achieved through the hierarchical structure of the organization or it may require more complex integrative mechanisms such as cross-unit teams. Thompson (1967) indicates that the degree of integration needed depends upon the type of interdependencies present among the units. These types of interdependencies, which are cumulative, are: pooled (the discrete contributions of parts to the whole), coordinated through standardization; sequential, coordinated by plans and schedules; and reciprocal, coordinated through mutual adjustment.

Structure has been defined as the design of the organization through which it is administered, with two aspects: the lines of communication and authority, and the information that flows through these lines (Chandler 1962), or how the work is divided and coordinated (Lawrence and Lorsch 1969). Elements of structure include complexity (the degree of differentiation--horizontal, vertical, or spatial), formalization (the degree of rules and regulations) centralization (the locus of formal control or power), and administrative intensity (the proportion of administrators to productive personnel) (Ford and Slocum 1976). Factors affecting the structural design are size, goals and assessment, technology, and environment. For contingency theorists, the most important of these are technology and environment.

The assumption underlying research on size and administrative intensity is based on administrative management theory which assumes that increases in size (in terms of personnel) leads to increases in control and the need for coordination. The research to date, however, is unclear on this relationship and there is no consensus on the direction of causality (Ford and Slocum 1976). Blau (1973) found in his study of academic work that increasing organizational size was accompanied by increasing differentiation. While the proportion of administrative personnel in a large organization is smaller, the increasing differentiation in an expanding organization requires more integration and thus reduces the administrative intensity at a declining rate.

Defining the domain or range of activities, the goals or objectives, of an organization is essential in determining the appropriate structure for attaining those goals. "Structure follows strategy" is a famous quote from Chandler (1962), who based the statement on his in-depth case studies of four

companies who nearly failed in the 1920's--General Motors, Sears, DuPont, and Standard Oil of New Jersey. Each survived and developed into the large organizations we know today because they fit their structure to their goals. Perrow (1970) distinguishes four categories of goals that an organization uses. Output goals define the product or service in terms of the consumer; system goals refer to the functioning of the organization independent of the product (e.g. growth, profits, etc.); product goals refer to the characteristics of the product in such terms as quality, quantity, variety, styling; and derived goals refer to the pursuit of other goals made possible by the power generated by the organization, such as community service, political aims, employee development, investment policies. Perrow also holds that "goals are multiple, conflicting, pursued in sequence, open to group bargaining, and in general, problematical, rather than obvious and given" (1970). One of the problems is in determining what are the "real" or operational goals as opposed to the formal, official goals. Hrebiniak (1977) also notes that the determination of goals is a dynamic process, affected by the structure of the organization that develops in relation to the demands of its environment. Thus goals influence, and are influenced by, structure and by the environment.

Closely related to the concept of goals is the idea of assessment, or evaluation. The important question, according to Thompson (1967), is not what an organization has accomplished but its fitness for future action; therefore, organizations are constantly being evaluated in light of their purposes, using maximizing or satisficing criteria for judgment. He suggests that there are four types of assessment situations based on combinations of desirable standards and beliefs about cause/effect knowledge. When standards are

ambiguous (e.g. multiple assessors with varying standards) and cause/effect knowledge is either complete or incomplete, organizations use social referent groups to compare their performances. How an organization assesses itself and how it is assessed by others has an influence on its goals for the future, and consequently on the structure of the organization.

Woodward (1958) categorized the types of technology in manufacturing organizations into three groups--mass production (assembly-line), unit (craft), and continuous process. She found that successful companies with mass production technology were more likely to have a bureaucratic form of organization, while those with unit production had a more flexible structure. Perrow (1970) and Thompson (1967) go beyond industrial organizations in classifying technology. Perrow developed four categories based on two dimensions, routiness and the number of exceptions (few or many). Thompson suggests three types of technology: long-linked sequential (assembly lines), mediating (banks, telephone companies, post office), and intensive (hospitals, schools, construction). The intensive type uses a variety of technologies.

Many contingency theorists hold that the key variable in organizational structure is the environment, and the uncertainty posed by the task environment, in particular whether the environment is stable or shifting (Lawrence and Lorsch 1969; Thompson 1967; Burns and Stalker 1961; Perrow 1970; Galbraith 1973). In discussing how organizations seek to reduce the uncertainty posed by the environment, Thompson utilizes Parsons' (1960) three-level conceptual framework of an organization. The technical core is the subunit involved with production or the transformation process. In a manufacturing company, this would be the shop floor; in a university it is the faculty. At the top is the institutional level, top management, which deals with the relationship of the

organization to its environment. In the middle is the managerial level, which administers the technical subunit and mediates between it and the institutional level. Thompson states that organizations seek to protect the technical core by reducing the environmental uncertainty variables affecting it, a task of the institutional and managerial levels. Methods used to reduce that uncertainty include the use of slack resources, smoothing out input and output transactions, anticipating and adapting to environmental changes, rationing, and establishing boundary-spanning units. Other methods used to reduce uncertainty include developing alternatives; seeking prestige; seeking power relative to dependencies through cooperation; encompassing crucial contingency activities within the boundaries of the organization through vertical integration, expansion of clientele, or incorporation of clientele; seeking to grow to capacity; enlarging domains, i.e. diversification or developing new products or services.

Galbraith (1973) views uncertainty in terms of information processing--the difference between the amount of information needed to perform the task and the amount possessed by the organization. The simplest mechanism to cope with uncertainty is the establishment of rules and regulations. As exceptions arise, rules need to be supplemented by a hierarchy of roles. With increasing uncertainty, the hierarchical system becomes overloaded and other procedures must be used. This might include decentralization of authority with control maintained through training, personnel selection, and goal setting. If the organization faces greater uncertainty, one of four strategies must be adopted. Two reduce the need for information processing: creation of slack resources or creation of self-contained units. Two increase capacity to process information: vertical information systems (computers) or creation of lateral relations.

Forms of lateral communications include direct contact, liaison roles, temporary task forces, permanent teams, an integrating role, expansion of that style into a linking-managerial role, and matrix design. The integrator role seems relevant for universities. The integrator is a coordinator of the decision process across interdependent departments; he has no formal authority, but represents the general manager's perspective, chairs task forces and teams, pulls information together into one place, has a wide range of contacts across departments; he is influential through expertise and access to information.

Matrix design also seems applicable. In this structural design, some of the people housed in functional departments are assigned to a particular project, either full-time or part-time, and report both to the functional department head and to the project director. Galbraith also states that the design can occur from the other direction--the functional manager becomes the integrator across a product-divisionalized structure.

Burns and Stalker (1961) found that two different management systems emerged depending upon the market environment of the firm. These two systems have been termed mechanistic and organic. Those firms operating in a stable environment used mechanistic systems (which are similar to bureaucracy), with a large number of hierarchical levels, centralization of decision making, many formal rules, high goal specificity, with authority based on position in the hierarchy. An organic system was found to be more appropriate for firms in a changing market. An organic system is characterized by frequent changes in positions and roles, few hierarchical levels, greater lateral communications, low quantity of rules, and authority based on expertise.

In sum, the contingency theory approach is one of selecting the appropriate structure for an organization based upon several variables; environmental uncertainty, type of technology, goals and assessment, degree of differentiation and integration, and size.

Graduate Schools and the Contingency Approach

A brief look at the history of graduate education in the U.S. should help in understanding the present situation. The earliest colleges were patterned on the English model (such as at Oxford and Cambridge), whose faculty were usually clergymen, whose primary goal was the transmission of knowledge and culture, with recitation from the text as the instructional method. In the 19th century, American students seeking advanced study went to Europe, most to the German universities. The main emphasis of the German universities was on graduate education, particularly scholarly inquiry and scientific research. American students returned home enthused with the advanced level of German scholarship and the different methods of instruction--the seminar, scholarly lecture, experimental laboratory, and the monographic study (Brubacher and Rudy 1976). While Yale awarded the first Ph.D., Johns Hopkins was the first university established for graduate education (in 1876). Although it, Clark, Chicago, and Catholic University attempted to establish institutions for graduate education only, this was not feasible (Berelson 1960). Other universities then added graduate education. Consequently, "a graduate school based on the German model was placed on top of an undergraduate college based on the English model" (Berelson 1960). This resulted in the graduate programs becoming subordinate to the college, partly due to the economics of the situation; the intermingling of graduate and undergraduate faculty; and consideration of the graduate faculty as unitary without distinguishing

among fields. The graduate dean came to have a relatively weak position in comparison to undergraduate deans and to deans of professional schools. Graduate education added several purposes to higher education, including seeking new knowledge through research and scholarly inquiry, and training of researchers. The environment demanded another--the practical application of research. The character of higher education was also changed, with the professionalization of college teaching as a career, greater specialization and differentiation into disciplinary departments, the addition of new methods of instruction, the development of libraries and laboratories, the establishment of scholarly societies and learned journals, university presses, and sabbatical leaves (Berelson 1960; Brubacher and Rudy 1976).

The Association of American Universities was founded in 1900 with 14 members, who together produced nearly 90% of all doctoral degrees. Issues debated by AAU in the early 1900's have a familiar ring--the meaning of research, the character and length of the dissertation, the quality of students, the proper examinations, the role of the Master's degree, preparation for college teaching and the appropriate degree, fellowships, college-university relations, the length of time for the degree, and the foreign language requirement. Through the years since then, the same issues arise and are debated, recommendations are made (which are similar through the years), few of which take hold in more than a few institutions. The only issue that seems to have been settled is that regarding the foreign language requirement. Many of the recommendations that have been made in the last 20 years (Berelson 1960; Heiss 1970; Scholarship and Society 1973; Hartnett and Katz 1977) would require considerable change in the attitudes and behavior of faculty, changes that cannot really be fostered and promoted by the current

formal structure of the graduate school within the university. Most of the literature on graduate education concentrates on these issues and problems, focusing on the program of study and the student. Few have attempted to look at the graduate school structure other than to make the usual recommendation to "strengthen the role of the dean."

In order to make a preliminary assessment of the current organizational structure of graduate schools, a random sample of 34 universities was drawn from the Research and Doctoral-Granting categories in the Carnegie Commission classification (1973). Data published by the National Center for Educational statistics on enrollments (1974) and earned degrees conferred (1971-72) were obtained for each institution in the sample. Written documents were obtained from the graduate schools of the institutions, such as catalogs, letters from deans or administrative personnel, and/or faculty handbooks. Information from these sources included quantitative data, such as the numbers of graduate school faculty, schools and/or colleges in the university, disciplines and the number of doctoral programs, graduate school administrators; the number on the graduate council and how they were selected, and whether the graduate dean was also responsible for the coordination of research (see Table I). Descriptive information was also obtained where possible.

A graduate school is a subunit within a university, established for the academic administration of graduate programs. The members of the subunit are departmental faculty members. There seems to be no pattern for selection to the graduate faculty--on criteria, degree of specificity, who specifies, complexity of the procedure, or whether membership is by appointment or election.

It was anticipated that the data would show differences related to size in comparing institutions among the categories, particularly since the categories

TABLE II

RESEARCH I-Pub.	1974 Graduate Enrollment (NOTE 1)		Percent Full-time Students to Total	1971-1972 Doctorates Awarded (NOTE 2)	No. of Faculty (Grad. School) Visiting or Adjunct		No. of Schools/Colleges (Other Than Grad.)	No. of Baccalaureate Programs	No. Grad. School Administrators	No. on Graduate Council ^a		Research Coordination
	Total	Full-time			RAISED	ADJUNCT				Selected	Appointed	
U. Ill., Urbana	9440	5352	57	826	N/A	N/A	17					
N.E. State, Raleigh	3593	926	26	149	1075	N/A	8	45	3	11	2	No
Ohio State	8306	5826	66	750	2778	N/A	5	15	79	6	43	Yes
Baylor	9246	7132	81	848	N/A	N/A	15	30				
UC-Davis	3531	2216	87	303	N/A	N/A	8	41				Yes
UCLA	4003	4905	82	568	N/A	N/A	13	53				No
U. Fla.	4124	2347	51	303	N/A	N/A	11					
RESEARCH I-Pvt.												
Casa Western Reserve	3130	1771	56	245	N/A	N/A						
U. of Miami (Fla.)	2311	565	24	89	312	8	7	10	52	20	12	6*
U.S.C.	8179	2305	28	475	1309	258		13	58	6		
Wash. U.	2606	1521	58	164	572	32		12	31	7		
Total	3230	3230	100	348	N/A	N/A						
RESEARCH II-Pub.												
Auburn	1784	848	48	108	396	N/A		8	27	4	13	7 No
Ohio State	3574	1582	44	230	492	N/A	6	9	44	10	2	No
Temple	4526	1403	31	153	960	N/A	10	8	51	5	27	5
U. Ark.	2563	425	15	138	810	N/A	9	10	31	6	13	4 Yes
U. Cincinnati	4545	2294	51	145	620	N/A	16	10	41			Yes
U. Kansas	4028	2148	46	241	1064	30		12		5**		
RESEARCH II-Pvt.												
Brandeis	706	681	96	83	333	N/A	2	9	20	2	22	3
Brown	1279	1124	88	162	N/A	N/A		10				
Clemson	1354	105	2	80	40	200	5	6	14	7		
Rice	801	801	100	104	325	N/A	5	8	26	12	2	Yes
Syracuse	4131	2445	59	257	N/A	N/A	14					
DOCTORAL I-Pub.												
Southern Miss.	2587	721	28	103	N/A	N/A	9	6				
U. Mo., Rolla	974	337	35	50	312	N/A	3	3	16		12	1
N. Mex. State	1235	658	53	35	302	N/A	6	5	15	3	12	2
SUNY, Stony Brook	4901	1550	32	77	N/A	N/A		9				
DOCTORAL I-Pvt.												
Reisselstein	1079	501	46	88	376	86	5	7	26	2		Yes
St. John's U.	1222	714	19	61	328	N/A		5	13	2*	12	5 No
U.S. Ind'l.	2339	387	17	74	46	29	8	2	3	0	NONE	No
U. of Denver	2020	1226	61	89	143	34		16				No
DOCTORAL II-Pub. & Pvt.												
Miami U.	1198	724	60	33	375	N/A	6	6	11	5	12	Yes
N. Texas State	4207	1585	38	126	N/A	N/A	7					
Tem. Christian U.	1824	373	21	42	193	19	5	5	6	1		

* 46 Adjunct Assistant Deans

** 49 Coordinators of Graduate Programs

* plus 4 in other graduate divisions-business, education

NOTE 1. 1974 Fall Enrollment. National Center of Educational Statistics

NOTE 2. Awarded degrees conferred, 1971-72. National Center for Educational Statistics

were determined partly on the basis of some size characteristics. However, there did not seem to be differences in administrative intensity, the number of graduate council members, nor whether coordination of research is a function of the graduate school. It should not be assumed that differences do not occur; it is only that such differences are not apparent from the available data. Blau's (1973) findings regarding administrative intensity may not hold for the graduate school, but may apply only to the university as a whole. While complete data are not available (N=14), the most frequent number of graduate council size clusters around 12.

In following Perrow's goal paradigm, the output goals of graduate schools in general could be defined to include some combination or all of the following: transmission of knowledge and culture, acquiring new knowledge through research, training researchers, training teachers, training other professionals, applying research, and disseminating results of research. While those goals pertaining to research have had primary emphasis (Heiss 1970), research is not the primary goal for all fields, thus leading to conflicts among the departments. In general, those in the humanities rank the training of teachers as more important than the training of researchers, while other fields, particularly the sciences, rate research as most important (Berelson 1960, Clark 1973). Because of the difficulty in determining the various types of goals from the data collected, this study could focus on only one output goal--the production of doctoral degrees.

Universities and their graduate schools use social referent tests for assessment purposes, since efficiency measures and instrumental tests have not been devised to measure the effectiveness of graduate schools. One evaluative

mechanism used is the peer review reports of various accrediting associations. While there has been much criticism of the Cartter (1966) and Roose-Andersen (1970) assessments of graduate education, they were attempts to meet the needs of the graduate schools for social referrent assessments.

The main task, or technology, of the graduate school is to transform holders of baccalaureate or master's degrees (input) into recipients of doctoral degrees (output). This is the basic objective, and the transformation process is accomplished by the faculty. The faculty, then, comprise the technical core, while the graduate school provides the coordination necessary for administratively processing the input as it moves through the transformation process. When applied to the university or graduate school setting, a complication arises with Parsons' concept of the three levels of organizational subunit responsibility and control. The faculty compose the technical core members, but they are also a part of the institutional level, as is the dean. The graduate faculty, either as a whole body or in a council of elected or appointed representatives, makes decisions regarding academic policy for the graduate school as a whole. The technology of graduate education, according to Thompson's (1967) classification, is intensive, as there is a variety of techniques used in various combinations to achieve change in the "raw materials" (students), partly determined by feedback from the input being transformed. This transformation process is nonroutine, nonuniform, with many exceptions, and has a high degree of uncertainty. However, the administrative processing function of the graduate school tends to fit Thompson's description of long-linked sequential technology and Perrow's description of a routine technology, with standardization as the main integrative mechanism. This does

not fit in with what contingency theory would suggest is appropriate--mechanisms that are appropriate for routine technologies are being used for nonroutine technology.

The environmental factors outlined in Leslie and Miller's monograph (1974) on "steady state" are applicable to graduate education as well as to postsecondary education at large. These include: decreased funding, increased costs, a decline in the college-age cohort, unionization of faculty, slackened employment demands for college graduates as well as for doctoral recipients, emergence of statewide agencies for coordination and control, and federal monitoring of faculty, staff, and student personnel policies. Various methods are being used to buffer the technical core on either the input or output side. One of these may be the reinstitution of required courses, many of which were dropped in the 60's under student pressure. While the rationale behind curriculum requirements is couched in the rhetoric of educational philosophy, the outcome is a factor in faculty job security and the market demand for Ph.D.'s. Courses that are required of all students must have faculty members to teach them. And while graduate faculty may view their task as primarily one of research, required courses in their disciplines accomplishes several goals: an increase in the number of majors thus increasing the pool of prospective graduate students; less likelihood of faculty retrenchment; increased need for graduate teaching assistants, thereby providing financial support for doctoral students; and a greater likelihood of departmental growth in numbers and prestige. Recommendations to colleges and universities to reduce environmental uncertainty include developing new sources for students, such as adults in continuing education, women, and prisoners; and developing new products, such as nontraditional,

interdisciplinary, and continuing education programs (Leslie and Miller 1974). These methods would most certainly have an impact upon the graduate schools, which are expected to meet the personnel needs for new programs.

Since the environment of the graduate school is turbulent, complex, and dynamic, contingency theory would suggest a flexible structure in order to anticipate and adapt to environmental change. One such possibility for change demonstrates the need for flexibility--interdisciplinary programs. These are difficult to implement as faculty members are members of a disciplinary department first and foremost, and it is through that department that faculty receive their rewards. Although nearly every graduate school in the sample indicated somewhere in the catalog the possibility of interdisciplinary study, only two followed up with a structure conducive to faculty effort in such an endeavor. One is Claremont Graduate School, which in itself is different from other graduate schools. Nearly half of Claremont's faculty are listed as faculty members in two to five different programs. The University of California at Davis uses a matrix structure, with "graduate groups" on a par with departments. Graduate groups are organized around a research interest, such as genetics, with participating faculty members who have appointments in other departments. Of the 41 doctoral programs offered by UC/Davis, 23 are offered by graduate groups.

Basically, the structure of the graduate school is formed by the Dean and other administrative personnel, and the Graduate Council. The Graduate Council is composed of selected graduate faculty members, a few administrators ex officio, and some students. It is generally chaired by the Dean. Although the size of the Council and the process of membership selection may differ among the graduate schools, the primary function of the Graduate Council is

to set university-wide academic policies for graduate education in the arts and sciences. The implementation of these policies is the responsibility of the dean, who may set administrative policies for such implementation. A few institutions have decentralized administrative responsibility to departments, divisions, or schools and colleges, with graduate school coordination.

The position of the graduate dean differs markedly from that of undergraduate academic deans and professional deans. As Corson (1975) puts it, he is a "dean without faculty" since faculty members are housed physically and intellectually in their respective departments. And, the graduate dean usually has little budgetary control except for the administrative costs of the graduate school (unless he is also responsible for research, in which case he may have discretionary funds for that purpose). As a consequence of these two conditions, the graduate dean must develop the graduate program through departmental chairpersons and faculty over whom he has only indirect influence. The influence he does have is based on his reputation and expertise in his specific discipline.

The ambiguous role of the dean has been a concern of those vitally interested in graduate education since the early years of the graduate school. Perhaps one role model that fits the graduate dean is that of the integrator described by Galbraith (1973). This role is one of coordinating the decision-making process across departmental lines. However, such a role would not take cognizance of the fact of faculty membership in the graduate school. Galbraith's matrix design is more applicable than the integrator role. It is a legitimate dual authority structure with the functional manager (the graduate school dean) as integrator across product divisions (the disciplinary

departments). (Note that this is a backwards matrix design as compared to that used by businesses). A problem here results from Galbraith's view of the distribution of power and influence relative to the dual leaders. His view is that matrix design creates a power balance between the roles of department head and integrator. In the university setting, this has not occurred. While the dual relationship has been legitimized, a greater amount of power resides in the departments since the departments have discretionary budgets and the authority for the hiring and firing of its members. An additional factor is the policy-making power of the graduate faculty, which does not enter into Galbraith's model. Galbraith also states that the matrix design provides alternatives to resolve goal conflicts. The graduate school does provide a means for resolving certain goal conflicts between and among departments, particularly in regard to policy. But it does so through standardization, with the resolution of conflict occurring through actions of the Graduate Council. Despite the problems, it does seem that a matrix structure, although modified, best describes the structure of graduate schools.

In Thompson's categorization of interdependence and coordination, standardization is the coordination mechanism for pooled interdependence. Departments could be considered to have pooled interdependence since it is really not necessary to interact with other departments (unless a student has a minor field outside the department), so that standardization of minimum rules and regulations for all graduate students becomes a function of the graduate school. There is sequential interdependence between the graduate school and the departments as students progress through the program. Plans and schedules are used to coordinate this progress. However, there is a reciprocal relationship between the departments and the graduate school in that the departments depend

upon the graduate school to handle the administrative procedures as the student moves from the input stage to the output stage. The graduate school expects the department to handle the cognitive aspects of the transformation process. According to Thompson, this interdependency would require much more than standardization or schedules. The matrix structure and the graduate council format should provide the mechanisms for mutual adjustment, but the focus seems to be more on standardization as a solution of conflict and other problems.

In summary, the graduate school structure does not seem to "fit" contingency theory prescriptions regarding the technology and environmental variables. The nonroutine, intensive type of technology of the graduate school, and the turbulence, uncertainty, and dynamism of the environment would suggest an organic system. However, that used by the graduate school tends to be mechanistic, with standardization having priority.

The question remains--could a graduate school be more effective if structural changes were made to fit the contingency variables? The question is worth further study beyond the preliminary analysis of this paper.

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